

VERSATILE SYSTEM FOR SINGLE MODE VCSELS

ABSTRACT OF THE DISCLOSURE

A system and method for providing a single mode VCSEL (vertical cavity surface emitting laser) component (100) is disclosed, comprising a semiconductor substrate (102) having a lower surface and an upper surface, a bottom electrical contact (104) disposed along the lower surface of the substrate, a lower mirror (106) formed of n-type material and disposed upon the upper surface of the substrate, an active region (108) having a plurality of quantum wells disposed upon the lower mirror portion, an upper mirror (110) formed from isotropic material and disposed upon the active region, an equipotential layer (112) disposed upon the upper mirror portion, a first upper electrical contact (120) disposed upon the equipotential layer, a second upper electrical contact (122) disposed upon the equipotential layer at a particular distance (124) from the first upper electrical contact, a first isolation region (126) disposed beneath the first upper contact and traversing the equipotential layer, the upper mirror, the active region, and the lower mirror, a second isolation region (128) disposed beneath the second upper contact and traversing the equipotential layer, the upper mirror, the active region, and the lower mirror, and an insulating layer (114, 116) interposed between the upper mirror and the equipotential layer and adapted to form therebetween an aperture (118) of smaller dimension than the particular distance between the first and second upper contacts.